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## CBO's 2016 Long-Term Projections for Social Security: Additional Information

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## CBO's 2016 Long-Term Projections for Social Security: Additional Information

### Abstract

[Excerpt] This report presents additional information about CBO's long-term projections for Social Security in the form of 12 exhibits that illustrate the program's finances and the distribution of benefits paid to and payroll taxes collected from various groups of people. In addition to presenting projections of *scheduled*, or full, Social Security benefits, which are calculated under the Social Security Act without regard to the trust funds' balances, this report provides projections of *payable* benefits, which would be less than the scheduled amounts once the trust funds were exhausted because annual outlays would be limited to annual revenues credited to the program. The appendix presents information about CBO's demographic projections, and a list of definitions of common terms appears at the end of the publication.

### Keywords

social security, projections, payable benefits

### Comments

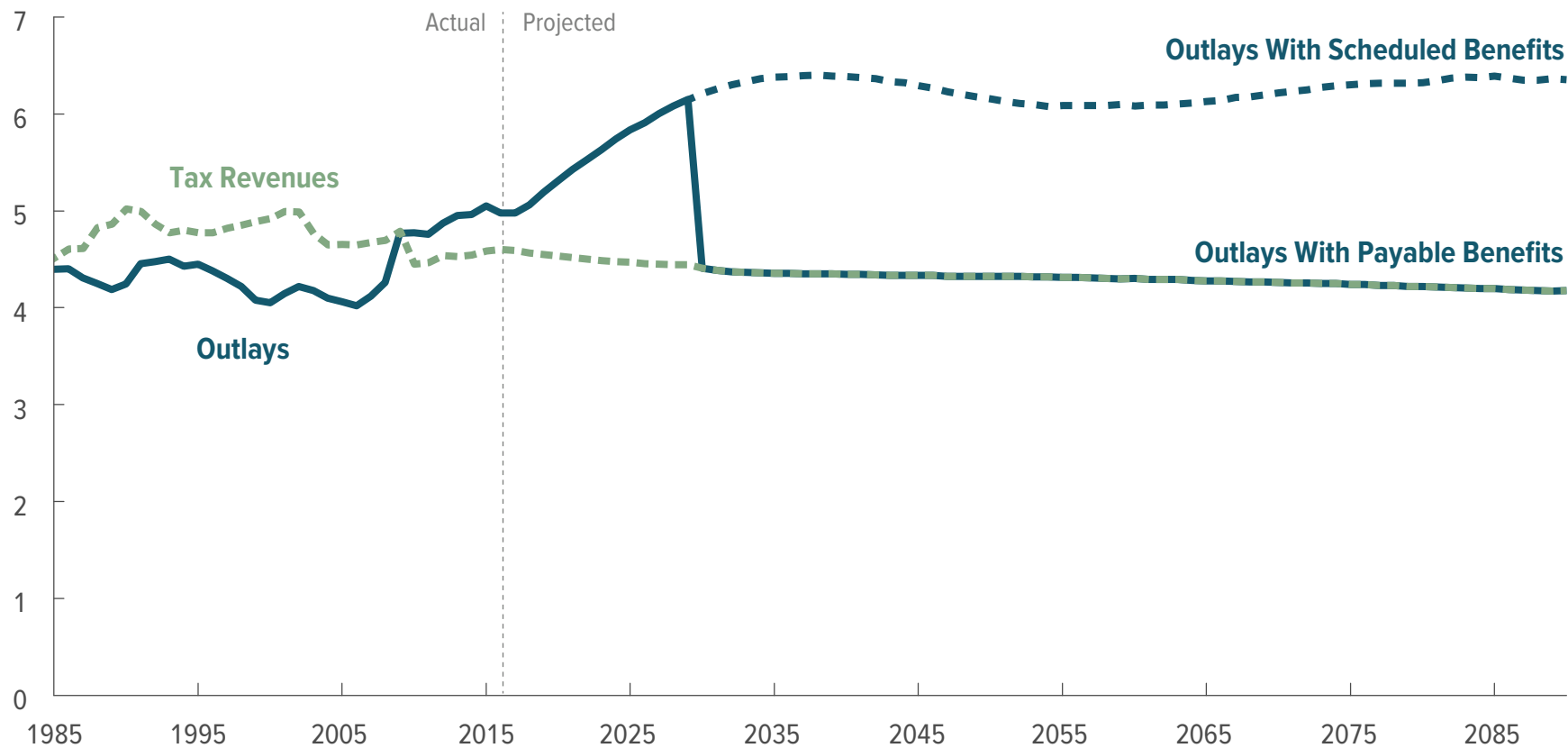
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# CBO

## CBO's 2016 Long-Term Projections for Social Security: Additional Information

Percentage of Gross Domestic Product



DECEMBER 2016

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## Notes

Unless otherwise indicated, the years referred to in this report are calendar years. Federal fiscal years run from October 1 to September 30 and are designated by the calendar year in which they end.

Numbers in the text and tables may not add up to totals because of rounding.

Additional data are posted with this report on the Congressional Budget Office's website.

The analysis presented in this report relies on projections published in *The 2016 Long-Term Budget Outlook* (Congressional Budget Office, July 2016), [www.cbo.gov/publication/51580](http://www.cbo.gov/publication/51580).

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# CBO's 2016 Long-Term Projections for Social Security: Additional Information

## Summary and Introduction

Social Security, which was established in 1935, is the largest single program in the federal budget.<sup>1</sup> About 73 percent of the roughly 61 million people who currently receive Social Security benefits are retired workers or their spouses and children, and another 10 percent are survivors of deceased workers; all of those beneficiaries receive payments through Old-Age and Survivors Insurance (OASI). The remaining 17 percent of beneficiaries are disabled workers or their spouses and children; they receive Disability Insurance (DI) benefits.

In fiscal year 2016, spending for Social Security benefits totaled \$905 billion, or almost one-quarter of federal spending. OASI payments accounted for about 84 percent of those outlays, and DI payments made up about 16 percent.

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1. For an overview of Social Security and a discussion of the program's financing and trust funds, see Congressional Budget Office, *Social Security Policy Options, 2015* (December 2015), [www.cbo.gov/publication/51011](http://www.cbo.gov/publication/51011).

Each year the Congressional Budget Office prepares long-term projections of the federal government's revenues and outlays, including those for the Social Security program. The most recent set of projections—which cover the period from 2016 through 2046 for the federal budget as a whole and 2016 through 2090 for Social Security—was published in July 2016.<sup>2</sup> Those projections incorporate the assumption that current law generally remains the same but that spending for Medicare and Social Security will continue as specified in law even if their trust funds are exhausted. That assumption is in accordance with the statutory requirement governing the construction of CBO's 10-year

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2. See Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), Chapter 2, [www.cbo.gov/publication/51580](http://www.cbo.gov/publication/51580). The 75-year projection period consists of calendar years 2016 through 2090, matching the period used in Social Security Administration, *The 2016 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (June 2016), [www.ssa.gov/oact/TR/2016](http://www.ssa.gov/oact/TR/2016).

baseline. Through 2046, CBO's projections incorporate the macroeconomic effects of fiscal policy; after 2046, the projections do not account for such effects.

This report presents additional information about CBO's long-term projections for Social Security in the form of 12 exhibits that illustrate the program's finances and the distribution of benefits paid to and payroll taxes collected from various groups of people. In addition to presenting projections of *scheduled*, or full, Social Security benefits, which are calculated under the Social Security Act without regard to the trust funds' balances, this report provides projections of *payable* benefits, which would be less than the scheduled amounts once the trust funds were exhausted because annual outlays would be limited to annual revenues credited to the program. The appendix presents information about CBO's demographic projections, and a list of definitions of common terms appears at the end of the publication.

### How Is Social Security Financed?

Social Security is funded by dedicated tax revenues from two sources: payroll taxes and income taxes on benefits. Today, 96 percent of those revenues come from the payroll tax—generally, 12.4 percent of people's earnings that are subject to the Social Security tax. Workers and their employers each pay half; self-employed people pay the entire amount. Earnings up to a maximum annual amount—\$118,500 in 2016—are subject to the payroll tax. The remaining share of tax revenues for the program—about 4 percent—is collected from income taxes on Social Security benefits.<sup>3</sup> The tax revenues that funded the program totaled \$859 billion in fiscal year 2016.<sup>4</sup>

Social Security retirement and disability benefits and the program's administrative costs are paid from two trust funds—one for the OASI program and one for the DI program. In addition to tax revenues, the funds also receive intragovernmental interest payments on the Treasury securities they hold. In a given year, the receipts credited to a fund, including the interest credited on its balances, minus spending for benefits and

administrative costs, constitute the trust fund's surplus or deficit. Although the two trust funds are legally separate, in this report, CBO generally follows the common analytical convention of considering them as combined.

### What Is the Outlook for Social Security Spending and Revenues?

In 2010, for the first time since the enactment of the Social Security Amendments of 1983, annual outlays for the program exceeded annual revenues (excluding interest) credited to the combined OASDI trust funds. A gap between those amounts has persisted since then, and in fiscal year 2016, total outlays exceeded noninterest income by about 7 percent. As more people in the baby-boom generation retire over the next few decades and as longer life spans lead to longer retirements, that gap will widen, CBO projects. If current laws governing taxes and spending stayed the same and if benefits were paid as scheduled, outlays for the Social Security program would rise from 5.0 percent of gross domestic product (GDP) in 2016 to 5.9 percent in 2026 and to 6.3 percent in 2046; they would exceed tax revenues by 33 percent in 2026 and by 42 percent in 2046.

According to CBO's projections, without changes in the programs, the balance of the DI trust fund will be exhausted in fiscal year 2022, the balance of the OASI trust fund will be exhausted in calendar year 2030, and the combined balances of the OASDI trust funds will be exhausted in calendar year 2029. If a trust fund's balance declined to zero and current revenues were insufficient to cover benefits specified in law, the Social Security Administration would no longer be permitted to pay full benefits

when they were due. In the years after a trust fund was exhausted, annual outlays would be limited to annual revenues: All receipts to the trust fund would be used, and the trust fund's balance would remain essentially at zero.<sup>5</sup>

The amount of Social Security taxes paid by various groups of people differs, as do the benefits that different groups receive. For example, people with higher earnings pay more in Social Security payroll taxes than do participants with lower earnings, and they also receive larger benefits. All told, Social Security's benefit formula is progressive because replacement rates—annual benefits as a percentage of past earnings—are lower, on average, for workers who have had higher earnings.<sup>6</sup> As another example, CBO projects that people who were born in more recent decades will pay more in taxes and receive more in benefits (even after an adjustment for inflation) than earlier generations because they typically will earn more over their lifetime and live longer.

3. See Joshua Shakin and Kurt Seibert, "The Taxation of Social Security Benefits," *CBO Blog* (February 12, 2015), [www.cbo.gov/publication/49948](http://www.cbo.gov/publication/49948). A portion of income taxes on Social Security benefits is credited to the Medicare Hospital Insurance Trust Fund; in fiscal year 2016, those revenues totaled \$23 billion.

4. That amount included \$17 billion that the government contributed as the employer's share of the payroll tax for federal workers. Such funds are recorded as offsetting receipts, rather than as revenues, because they result from intragovernmental transfers.

5. Noah P. Meyerson, *Social Security: What Would Happen If the Trust Funds Ran Out?* Report for Congress RL33514 (Congressional Research Service, August 28, 2014), available from U.S. House of Representatives, Committee on Ways and Means, *2014 Green Book*, Chapter 1: Social Security, "Social Security Congressional Research Service Reports" (accessed October 18, 2016), <http://go.usa.gov/cCXcG>. That report explains that it is unclear how payments would be reduced. In its analysis, CBO assumes that each year after the trust funds became exhausted, each recipient's annual benefit would be reduced by the percentage necessary for outlays to match revenues.

6. See Congressional Budget Office, *Is Social Security Progressive?* (December 2006), [www.cbo.gov/publication/18266](http://www.cbo.gov/publication/18266).



## Changes in CBO's Long-Term Social Security Projections Since 2015

CBO currently projects shortfalls for Social Security that are larger than those shown in last year's edition of this report.<sup>7</sup>

### Spending and Revenues Measured Relative to Gross Domestic Product

CBO's projection of the 75-year actuarial deficit—the difference between a trust fund's income rate and its cost rate—as a share of GDP has increased from 1.45 percent of GDP in last year's report to 1.55 percent in the current analysis.<sup>8</sup> The agency's current projection of the 75-year cost rate as a percentage of GDP is 6.17 percent, about 1½ percent higher than last year's projection of 6.07 percent. The 75-year income rate is similar to last year's.

Factors that increased the projected actuarial deficit include lower projected interest rates, GDP, and taxable payroll amounts, changes to projected educational attainment and to the ages at which future retirees choose to claim Social Security benefits, and the effects of a projection period

that is one year later. Factors that partially offset the growth in the deficit include revised demographic projections (specifically, revised projections for immigration and mortality rates) and lower projected rates of disability incidence.

### Spending and Revenues Measured Relative to Taxable Payroll

At 4.68 percent of taxable payroll, CBO's projection of the 75-year actuarial deficit is higher than the agency's 2015 projection of 4.37 percent. Because payroll taxes are a fixed share of taxable payroll, the projection for the 75-year income rate is about the same as the 2015 estimate. However, the projection of the 75-year cost rate is 18.62 percent of taxable payroll, about 1½ percent higher than last year's projection of 18.33 percent.

### Quantifying Uncertainty

CBO's long-term projections for Social Security depend critically on its projections of key demographic and economic factors; all such long-term projections are inherently uncertain. (See the appendix for information on CBO's demographic projections.) In previous reports, CBO estimated a distribution of outcomes from 500 simulations using its long-term model to quantify that uncertainty. Measured relative to GDP, the range of uncertainty was much wider for outlays than for revenues. The distributions for most of the important demographic and economic variables in that model—for example, fertility rates, mortality rates, interest rates, and the rate of growth in productivity—were based on historical year-to-year variation.

This year's report does not include a range of uncertainty because the agency is currently reassessing its analytic methods for measuring uncertainty. In the analysis presented in last year's report, even when values for key economic and demographic factors were varied, the balances in the Social Security trust funds were projected to be insufficient to pay scheduled benefits by the mid-2030s in nearly all simulations.

### Related CBO Analyses

This report updates projections in *CBO's 2015 Long-Term Projections for Social Security: Additional Information* (December 2015), [www.cbo.gov/publication/51047](http://www.cbo.gov/publication/51047); it includes analysis arising from newly available economic and programmatic data and updated projections of economic trends as well as from some changes in the agency's methods and improvements in models.

Additional information related to the current projections can be found in the following CBO publications:

- For this analysis, CBO used projections that it published in *The 2016 Long-Term Budget Outlook* (July 2016), [www.cbo.gov/publication/51580](http://www.cbo.gov/publication/51580), which are consistent with the 10-year baseline CBO published in *Updated Budget Projections: 2016 to 2026* (March 2016), [www.cbo.gov/publication/51384](http://www.cbo.gov/publication/51384).
- The general methods used to develop the projections presented in this report are described in *CBO's Long-Term Model: An Overview* (June 2009), [www.cbo.gov/publication/20807](http://www.cbo.gov/publication/20807).

7. See Congressional Budget Office, *CBO's 2015 Long-Term Projections for Social Security: Additional Information* (December 2015), [www.cbo.gov/publication/51047](http://www.cbo.gov/publication/51047).

8. The income rate is the present value of annual tax revenues plus the trust fund balance at the beginning of the period; and the cost rate is the present value of annual outlays plus the present value of a year's worth of benefits as a reserve at the end of the period, each divided by the present value of GDP or taxable payroll over the period. (The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time.)

- The values used for the demographic and economic variables underlying the projections are explained in *The 2016 Long-Term Budget Outlook* (July 2016), [www.cbo.gov/publication/51580](http://www.cbo.gov/publication/51580).
- The differences between CBO's long-term Social Security projections and those of the Social Security Trustees are explained in the testimony of Keith Hall, Director, Congressional Budget Office, before the Subcommittee on Social Security of the House Committee on Ways and Means, *Comparing CBO's Long-Term Projections With Those of the Social Security Trustees* (September 21, 2016), [www.cbo.gov/publication/51988](http://www.cbo.gov/publication/51988).

Various approaches to changing Social Security are presented in these reports:

- *Social Security Policy Options, 2015* (December 2015), [www.cbo.gov/publication/51011](http://www.cbo.gov/publication/51011);
- *Policy Options for the Social Security Disability Insurance Program* (July 2012), [www.cbo.gov/publication/43421](http://www.cbo.gov/publication/43421); and

- *Options for Reducing the Deficit: 2017 to 2026* (December 2016), [www.cbo.gov/publication/52142](http://www.cbo.gov/publication/52142).

A collection of CBO's Social Security analyses can be found on the Social Security page of CBO's website ([www.cbo.gov/topics/social-security](http://www.cbo.gov/topics/social-security)).



## **The System's Finances**

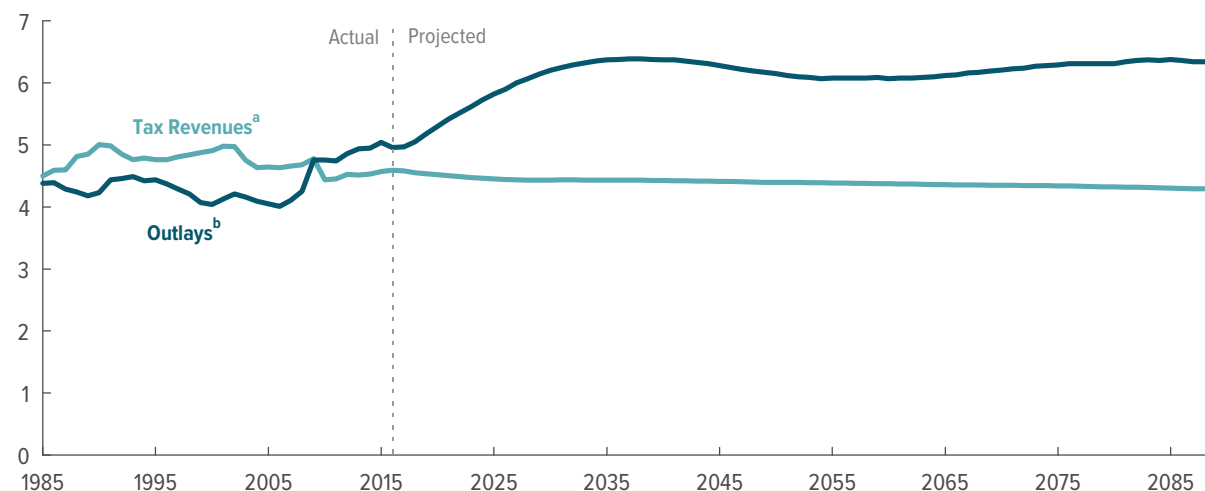


The first part of this report (Exhibits 1 through 6) examines Social Security's financial status from several vantage points. The fullest perspective is provided through projections of the streams of the program's annual tax revenues and outlays. A more succinct analysis is given in measures that summarize those annual streams as single numbers. The system's finances also are described in projections of the trust fund ratio—the amount in a trust fund at the beginning of a year divided by outlays in that year.

Exhibit 1.

**Social Security Tax Revenues and Outlays, With Scheduled Benefits**

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

a. Tax revenues consist of payroll taxes, income taxes on benefits, and reimbursements from the general fund of the Treasury to make up for reductions in payroll taxes in 2011 and 2012.

b. Outlays consist of scheduled benefits and administrative costs.

In calendar year 2015, Social Security's total outlays equaled 5.0 percent of the country's gross domestic product: Payments from the OASI trust fund accounted for 4.2 percent, and payments from the DI trust fund accounted for 0.8 percent. Tax revenues dedicated to the program equaled 4.6 percent of GDP: 4.0 percent was credited to the OASI trust fund and 0.7 percent was credited to the DI trust fund. Most of the tax revenue was from payroll taxes, although about 4 percent came from income taxes on benefits.

Over the next two decades, the number of OASI beneficiaries will increase as members of the baby-boom generation retire. As a result, in 2040, under current law, spending for OASI will amount to 5.6 percent of GDP if scheduled benefits are paid, CBO estimates. In the two decades after that, OASI spending with scheduled benefits is projected to decline slightly and to stabilize, relative to the size of the economy, as people in the baby-boom generation die. Demographers generally predict increasing life expectancy but stable birth rates, so demographic pressures would tend to cause scheduled benefits to resume their upward trajectory in the mid-2060s, boosting OASI outlays back up to 5.5 percent of GDP in 2090. Under current law and with scheduled benefits, outlays for DI will stay close to 0.8 percent of GDP over the next 75 years, CBO projects.

*(continued)*

## Exhibit 2.

**Social Security Tax Revenues and Outlays, With Scheduled Benefits, in Selected Years**

Percentage of Gross Domestic Product

	Actual, 2015	Projected		
		2040	2065	2090
Old-Age and Survivors Insurance				
Tax Revenues	3.96	3.82	3.76	3.71
Outlays	4.18	5.56	5.27	5.52
Difference	-0.22	-1.74	-1.51	-1.81
Disability Insurance				
Tax Revenues	0.65	0.61	0.60	0.58
Outlays	0.82	0.82	0.85	0.83
Difference	-0.17	-0.21	-0.25	-0.25
Combined Old-Age and Survivors Insurance and Disability Insurance				
Tax Revenues	4.60	4.43	4.36	4.29
Outlays	5.00	6.37	6.12	6.35
Difference	-0.39	-1.95	-1.76	-2.05

Source: Congressional Budget Office.

Tax revenues consist of payroll taxes and income taxes on benefits in the specified year. Outlays consist of scheduled benefits and administrative costs. Scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds.

*(continued)*

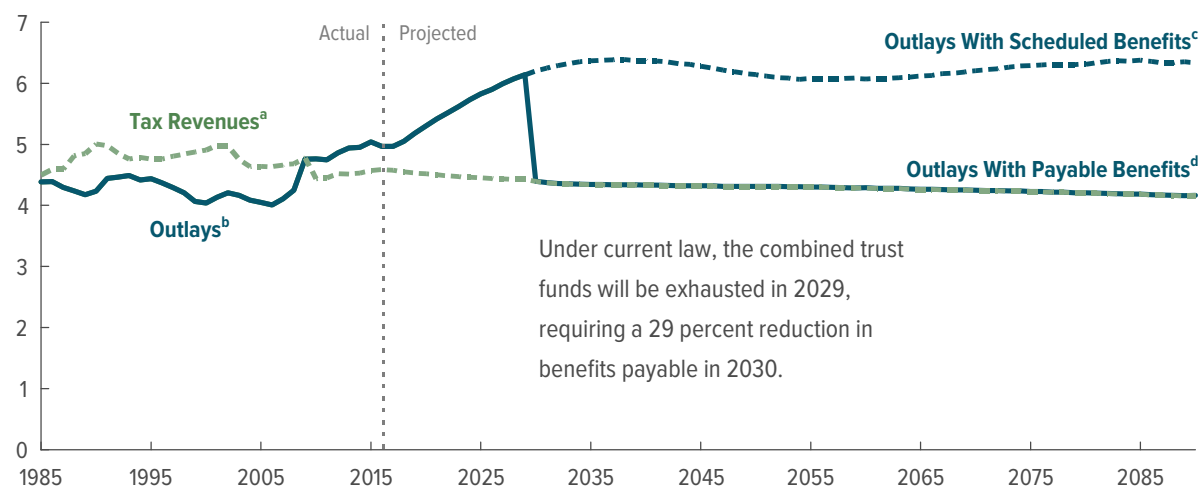
CBO projects that, under current law, Social Security revenues relative to GDP will change little over the next few decades. Because CBO expects the widening of the earnings distribution that has been observed in past decades to continue, taxable earnings are projected to decline as a share of GDP over the next decade. Because Social Security's payroll taxes are a fixed share of taxable earnings, CBO anticipates that, under current law, payroll tax receipts will decline as a percentage of GDP—from 4.4 percent in 2015 to 4.1 percent in 2040. However, CBO expects that both the number of recipients whose benefits are subject to taxation and their average tax rates will increase. As a result, the agency projects that income taxes on Social Security benefits will rise from about 0.2 percent of GDP today to about 0.3 percent in 2040. Consequently, by 2040, total Social Security tax revenues—from payroll taxes and income taxes on benefits—would equal 4.4 percent of GDP, slightly less than the current amount.

The gap between Social Security tax revenues and outlays was about 0.4 percent of GDP in 2015. With outlays likely to increase sharply and tax revenues expected to decline slightly (both relative to GDP), the difference between them is projected to increase to 1.9 percent in 2040. That gap is projected to narrow slightly until the early 2050s (because of a drop in outlays as the baby-boom population shrinks) but then to widen again, reaching 2.1 percent of GDP in 2090. ♦

Exhibit 3.

**Social Security Tax Revenues and Outlays, With Scheduled and Payable Benefits**

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

- a. Tax revenues consist of payroll taxes, income taxes on benefits, and reimbursements from the general fund of the Treasury to make up for reductions in payroll tax rates in 2011 and 2012. Tax revenues do not include interest credited to the Social Security trust funds. Tax revenues shown are consistent with payable benefits; they would be slightly higher if scheduled benefits were paid because revenues from income taxes paid on those benefits would be higher.
- b. Outlays consist of benefits and administrative costs.
- c. Scheduled benefits are benefits as calculated under the provisions of the Social Security Act, regardless of balances in the Social Security trust funds.
- d. Payable benefits are benefits as calculated under the provisions of the Social Security Act, reduced as necessary to ensure that outlays do not exceed the Social Security system's revenues once the balances in the combined Social Security trust funds are exhausted. If a trust fund's balance declined to zero and current revenues were insufficient to cover benefits specified in law, the Social Security Administration would no longer be permitted to pay full benefits when they were due. In the years after a trust fund was exhausted, annual outlays would be limited to annual revenues.

If the gap between outlays and revenues occurs as CBO projects, the balance in the trust funds will decline to zero and the Social Security Administration will no longer be permitted to pay full benefits when they are due. In the years after the trust funds' exhaustion, annual outlays would thus be limited to annual revenues (although the method of payment reduction is not prescribed under current law).

In its projections of outlays with payable benefits, CBO assumed that in each year after the combined OASDI trust funds' exhaustion, recipients' annual benefit amounts would be reduced by the percentage needed to make total outlays match total revenues. Payable benefits would equal scheduled benefits until the combined trust funds were exhausted; after that, they would be the same as the program's annual revenues.

According to CBO's projections, under current law the DI trust fund will be exhausted in fiscal year 2022, the OASI trust fund will be exhausted in calendar year 2030, and the combined OASDI trust funds will be exhausted in calendar year 2029. In 2030, when revenues for the two trust funds combined are projected to equal 71 percent of scheduled outlays, payable benefits thus would be 29 percent below scheduled benefits. The projected gap between scheduled and payable benefits would close slightly before widening again, to 34 percent, by 2090. ♦

Exhibit 4.

**Reductions in Old-Age and Survivors Insurance Benefits and Disability Insurance Benefits Following Exhaustion of the Trust Funds, in Selected Years**

Percentage Reduction in Benefits	2023 <sup>a</sup>	2030 <sup>b</sup>	2031 <sup>c</sup>	2040	2060	2080
Old-Age and Survivors Insurance	n.a.	n.a.	31	33	29	34
Disability Insurance	20	25	25	26	30	30
Combined Old-Age and Survivors Insurance and Disability Insurance	n.a.	29	30	32	29	33

Source: Congressional Budget Office.

n.a. = not applicable.

- a. Fiscal year 2023 is the first year after the projected exhaustion in 2022 of the Disability Insurance Trust Fund.
- b. Calendar year 2030 is the first year after the projected exhaustion in 2029 of the combined trust funds.
- c. Calendar year 2031 is the first year after the projected exhaustion in 2030 of the Old-Age and Survivors Insurance Trust Fund.

If current laws governing Social Security remain in effect, the OASI trust fund will be exhausted in 2030, CBO estimates. In 2031, therefore, benefits would need to be reduced by 31 percent from scheduled amounts if outlays were limited to revenues credited to the trust fund. After increasing for several years, the required reduction would abate as people in the baby-boom generation died: In 2060, CBO projects, payable benefits would need to be 29 percent lower than scheduled benefits. And because life expectancy is anticipated to continue to rise, by 2080, they would need to be 34 percent lower.

Under current law, the DI trust fund will be exhausted sooner—in fiscal year 2022, according to CBO’s projections. If the program’s outlays were limited thereafter to revenues credited to the trust fund and if the Social Security Administration reduced DI benefits accordingly, payments to beneficiaries in fiscal year 2023 would be 20 percent less than the amounts scheduled under current law, CBO projects. Moreover, because of the requirement to keep the trust fund in balance, the government would need to continue to reduce benefits: In 2040, payable DI benefits would be 26 percent less than scheduled benefits, and by 2080, they would be 30 percent less. ♦

## Exhibit 5.

**Summarized Financial Measures for Social Security, With Scheduled Benefits**

	As a Percentage of Gross Domestic Product			As a Percentage of Taxable Payroll		
	Income Rate	Cost Rate	Actuarial Balance (Difference)	Income Rate	Cost Rate	Actuarial Balance (Difference)
Old-Age and Survivors Insurance						
25 years (2016–2040)	4.42	5.31	-0.89	12.97	15.58	-2.61
50 years (2016–2065)	4.12	5.30	-1.18	12.26	15.77	-3.51
75 years (2016–2090)	4.00	5.34	-1.34	12.08	16.10	-4.03
Disability Insurance						
25 years (2016–2040)	0.65	0.83	-0.18	1.91	2.44	-0.53
50 years (2016–2065)	0.63	0.83	-0.21	1.87	2.48	-0.61
75 years (2016–2090)	0.62	0.83	-0.22	1.86	2.51	-0.65
Combined Old-Age and Survivors Insurance and Disability Insurance						
25 years (2016–2040)	5.07	6.14	-1.07	14.88	18.02	-3.14
50 years (2016–2065)	4.75	6.13	-1.38	14.13	18.25	-4.12
75 years (2016–2090)	4.62	6.17	-1.55	13.94	18.62	-4.68

Source: Congressional Budget Office.

Scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds. Over the relevant periods, the *income rate* is the present value of annual tax revenues plus the initial trust fund balance, and the *cost rate* is the present value of annual outlays plus the present value of a year's worth of benefits as a reserve at the end of the period, each divided by the present value of gross domestic product or taxable payroll. Present value is a single number that expresses a flow of current and future income or payments in terms of an equivalent lump sum received or paid at a specific time. The actuarial balance is the difference between the income and cost rates.

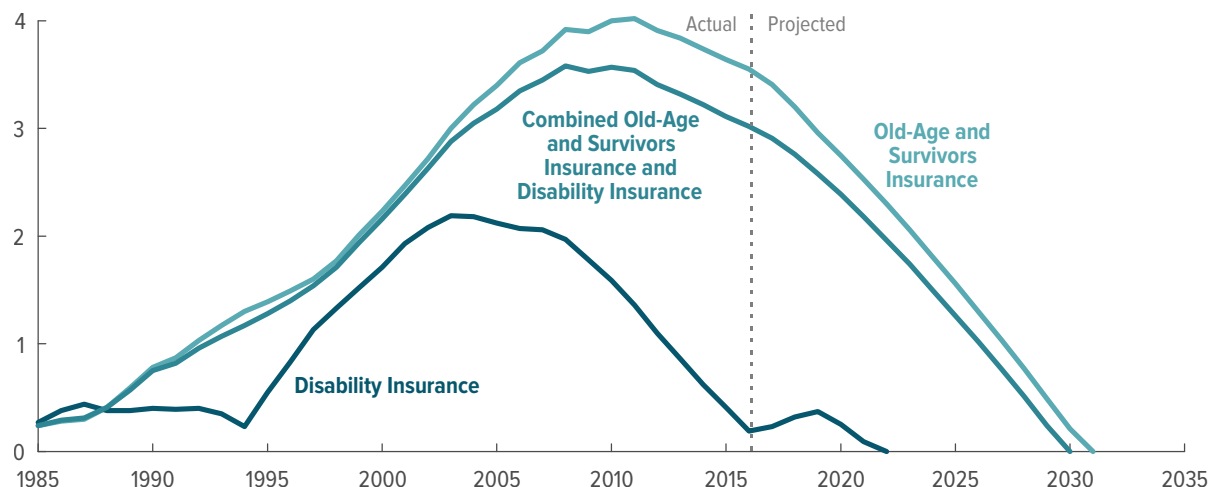
The actuarial balance—a summary measure of the financial status of the trust funds—is the difference between two other financial measures: the income rate (a measure of tax revenues over time) and the cost rate (a measure of outlays over time).

CBO estimates that, under current law, the 75-year actuarial balance for the combined trust funds will be -1.55 percent of GDP (-1.34 percent for the OASI trust fund and -0.22 percent for the DI trust fund); the minus signs indicate that the cost rates exceed the income rates. Thus, if payroll taxes were increased immediately and permanently by 1.55 percent of GDP or if scheduled benefits were reduced equivalently, at the end of 2090, the trust funds' combined balance would equal the outlays projected for 2091. (In 2017, 1.55 percent of GDP would be about \$300 billion.) The calculation of the actuarial balance excludes the macroeconomic and individual behavioral effects that would result from an increase in taxes or a reduction in benefits, which would depend on the specifics of the policy change. The actuarial balance could be noticeably larger or smaller than CBO currently projects, however. Because the projected gap between outlays and revenues widens over time, the actuarial deficit is projected to be larger over 75 years than it is over the 25- or 50-year periods.

The actuarial balance is also sometimes measured relative to taxable payroll. By that measure, CBO projects that the 75-year actuarial balance for the combined trust funds would be -4.68 percent (-4.03 percent for the OASI trust fund and -0.65 percent for the DI trust fund). ♦



Exhibit 6.

**Social Security Trust Fund Ratios**

Source: Congressional Budget Office.

A trust fund ratio is the balance in the trust fund at the beginning of the calendar year, divided by outlays (benefits and administrative costs) for that year. A trust fund is exhausted when the ratio reaches zero. Under current law, a Social Security trust fund cannot incur negative balances. Although the trust funds for Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) are legally separate, CBO generally follows the common analytic convention of considering them as combined and refers to them as the combined, or OASDI, trust funds.

A trust fund's ratio indicates how many years of benefits could be paid from the balances in the trust fund at the beginning of a given year. CBO estimates that the ratio for the combined OASDI trust funds was 3.0 at the beginning of 2016—that is, the trust funds' balances were about three times the projected benefit payments for the year. Under current law, the last year that the ratio is expected to be positive is 2029. That is, the balance in the combined OASDI trust funds will be exhausted by the end of 2029, and payments to beneficiaries would need to be reduced to make outlays equal revenues. Considering the uncertainties that surround such projections, however, the exhaustion date could be a few years earlier or later.

CBO projects that, under current law, the ratio for the OASI trust fund alone will steadily decline from 3.6 this year until the trust fund is depleted in 2030. The DI trust fund ratio will rise over the next three years as a result of a provision in the Bipartisan Budget Act of 2015 that changed the allocation of the payroll tax between the OASI and DI programs, granting a larger share to the DI trust fund for calendar years 2016 through 2018 and reducing by an equal amount the share allocated to the OASI trust fund for those years. Thereafter, the DI trust fund ratio is projected to decline until that trust fund is exhausted in fiscal year 2022. ♦



# **The Distribution of Benefits and Payroll Taxes**



The second part of this report (Exhibits 7 through 12) examines the amount of Social Security benefits distributed to, and taxes paid by, participants. Those participants are grouped by their year of birth and lifetime household income. (A household can consist of a single person or a married couple.) CBO divided people into 10-year birth cohorts (by the decade of birth) and into quintiles of lifetime household earnings (the lowest, middle, and highest fifths are shown in the exhibits). In this analysis, lifetime earnings for someone who is single in all years equal the present value at age 65 of that person's real (inflation-adjusted) earnings over a lifetime. (Present value is a single number that expresses a flow of current and future income or payments in terms of an equivalent lump sum received or paid at a specific time.) In any year in which someone is married, the measure of that person's earnings is the average of the couple's earnings, with adjustments to account for economies of scale in household consumption.

The discount rate that CBO used to compute present values in its Social Security distributional analyses is equal to the average interest rate on federal debt. CBO's modeling approach produces estimates for individuals; household earnings are used only to place individuals into groups. CBO calculated benefits net of any income taxes paid by recipients on their benefits. Mean values are estimated for each earnings group and birth cohort.

Most retired and disabled workers receive benefits on the basis of their own work history. Exhibits 7 through 10 present measures of those benefits that do not include benefits received by dependents or survivors who are entitled to receive payments on the basis of another person's work history. Exhibits 11 and 12 present a more comprehensive perspective on the distribution of Social Security benefits. They show measures of the total amount that each participant pays in payroll taxes over his or her lifetime and each participant's total lifetime benefits—including dependents' and survivors' benefits.

## Exhibit 7.

**Mean Initial Benefits for Retired Workers, With Scheduled and Payable Benefits**

Thousands of 2016 Dollars

10-Year Birth Cohort	All Retired Workers		Lowest Quintile of Lifetime Household Earnings		Middle Quintile of Lifetime Household Earnings		Highest Quintile of Lifetime Household Earnings	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All</b>								
1940s	17	17	9	9	18	18	24	24
1960s	19	17	10	9	19	17	27	24
1980s	24	18	13	9	24	17	36	26
2000s	35	25	19	13	34	24	52	37
<b>Men</b>								
1940s	21	21	11	11	22	22	27	27
1960s	21	19	11	10	22	19	30	27
1980s	27	20	14	10	26	19	41	30
2000s	39	27	20	14	38	26	59	41
<b>Women</b>								
1940s	14	14	8	8	14	14	19	19
1960s	17	15	10	9	17	15	23	20
1980s	22	16	12	9	22	16	31	22
2000s	31	22	18	13	31	22	44	31

Source: Congressional Budget Office.

Initial annual benefits are computed for all people who are eligible to claim retirement benefits at age 62 and who have not yet claimed any other Social Security benefits. All workers are assumed to claim benefits at age 65. All amounts are net of income taxes paid on benefits. Scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds. Payable benefits are benefits as calculated under that act, reduced as necessary to ensure that outlays do not exceed the Social Security system's revenues once the balances in the Social Security trust funds are exhausted.

Because average earnings are expected to rise, real initial scheduled benefits are projected to be higher in the future than they are today. CBO considered a hypothetical benefit: the mean initial amount workers would receive on the basis of earnings through age 61 if each of those workers claimed benefits at age 65. That benefit would grow over time, although the growth would be partly offset for some birth cohorts because of the increase in the full retirement age from 65 (for people born before 1938) to 67 (for people born after 1959). The effect of that increase is to reduce benefits at any age at which benefits are claimed.

Measured in 2016 dollars, average initial scheduled benefits for people born in the 2000s are projected to be roughly twice the initial benefits received by those born in the 1940s. The proportionate increase is greater for women than for men because women's earnings have grown more than men's earnings.

In CBO's projections, payable benefits decline sharply when the trust funds are first exhausted but then gradually rise because of growth in earnings and in tax revenues. For people who were born in or after the mid-1960s, initial payable benefits are lower than initial scheduled benefits.

Initial benefits are projected to be more than 30 percent lower for women than for men born in the 1940s, but that gap narrows to about 20 percent for later cohorts as men's and women's earnings become more equal. ♦

Exhibit 8.

### Mean Initial Replacement Rates for Retired Workers, With Past Earnings Limited to the Last Five Years of Substantial Earnings, Adjusted for Growth in Prices

Percent

10-Year Birth Cohort	All Retired Workers		Lifetime Household Earnings					
			Lowest Quintile		Middle Quintile		Highest Quintile	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All</b>								
1940s	43	43	62	62	45	45	27	27
1960s	40	35	61	53	41	36	24	21
1980s	45	33	76	55	44	32	24	17
2000s	46	32	80	55	45	31	23	16
<b>Men</b>								
1940s	41	41	63	63	42	42	21	21
1960s	39	34	62	54	41	36	19	17
1980s	46	33	80	58	45	32	19	14
2000s	46	32	83	57	45	31	18	13
<b>Women</b>								
1940s	46	46	62	62	48	48	34	34
1960s	42	37	60	52	41	36	29	26
1980s	45	32	72	51	43	31	29	21
2000s	46	32	76	53	44	30	29	21

Source: Congressional Budget Office.

The initial replacement rate is a worker's initial benefit as a percentage of his or her preretirement earnings, defined as the average of the last five years of substantial earnings before age 62. Substantial earnings are annual earnings that are at least half of the worker's average indexed earnings. Replacement rates are computed for all individuals who are eligible to claim retirement benefits at age 62 and who have not yet claimed any other benefit. To capture individuals with significant attachment to the labor force, workers with fewer than 20 years of earnings that are above 10 percent of the average wage index in each year are excluded. All workers are assumed to claim benefits at age 65. All values are net of income taxes paid on benefits.

Median initial replacement rates are included in the supplemental data for this report. Those data are available on CBO's website ([www.cbo.gov/publication/52298](http://www.cbo.gov/publication/52298)).

In this exhibit, initial replacement rates are initial benefits as a percentage of workers' pre-retirement earnings—specifically, the average of the last five years of substantial earnings before age 62, with adjustments to account for growth in prices. Several patterns are worth noting:

First, because of the progressive nature of Social Security's benefit formula, replacement rates are much higher for workers with lower earnings.

Second, with payable benefits, replacement rates would drop noticeably for people in the cohorts that first received benefits after the trust funds were exhausted.

Third, scheduled replacement rates are higher for later cohorts than for earlier cohorts in the lowest quintile of lifetime household earnings, whereas they are lower for later cohorts in the highest earnings quintile. Because of increasing earnings inequality, earnings for workers in the lower quintiles are projected to grow more slowly than average wages, but earnings for workers in the higher quintiles are projected to grow more quickly than average.

Finally, replacement rates are noticeably higher for women than for men in the highest quintile. Although men's earnings in that quintile are greater than women's earnings, on average, their benefits are not proportionately larger because of Social Security's progressive benefit formula. By contrast, replacement rates are higher for men in the lowest household earnings quintile who were born in the 1960s or later because men tend to earn more over a lifetime, so their benefits are larger, on average, than women's benefits. However, late-career earnings are similar for men and women in that group, so the replacement rate is higher, on average, for men. ♦

Exhibit 9.

### Mean Present Value of Lifetime Benefits Relative to Lifetime Earnings for Retired Workers, With Scheduled and Payable Benefits

Percent

10-Year Birth Cohort	All Retired Workers		Lifetime Household Earnings					
			Lowest Quintile		Middle Quintile		Highest Quintile	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
All								
1940s	9	8	16	16	11	10	7	6
1960s	10	8	22	17	15	11	7	5
1980s	11	8	27	21	17	13	7	5
2000s	11	8	26	20	17	13	6	5
Men								
1940s	7	7	13	13	9	8	5	5
1960s	8	6	21	16	13	10	5	4
1980s	9	7	26	20	16	12	5	4
2000s	9	6	25	19	16	12	5	4
Women								
1940s	13	12	18	17	14	13	12	11
1960s	13	10	24	18	17	13	9	7
1980s	15	11	28	22	19	14	10	8
2000s	14	11	28	21	19	14	10	8

Source: Congressional Budget Office.

Benefits are measured as the present value of all retired-worker benefits received. Benefits are computed for all people who claim retired-worker benefits on the basis of their own earnings and have not yet claimed any other Social Security benefits. To calculate present value, benefits are adjusted for inflation (to produce constant dollars) and discounted to age 65. All values are net of income taxes paid on benefits. Scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds. Payable benefits are benefits as calculated under that act, reduced as necessary to ensure that outlays do not exceed the Social Security system's revenues once the balances in the Social Security trust funds are exhausted.

CBO calculates lifetime retirement benefits as the present value of all such benefits that a worker receives from the program, and it measures those benefits relative to the present value of lifetime earnings, with all values adjusted to account for growth in prices. Scaling by lifetime earnings accounts for economic growth over time and provides context for benefit amounts. CBO estimates that—with the exception of the highest earnings quintile—later birth cohorts' real, average lifetime scheduled benefits relative to lifetime earnings will generally be greater than those for earlier cohorts.

The projected trends in lifetime retirement benefits relative to lifetime earnings differ from the trends in initial replacement rates, for two reasons. First, as life expectancy increases, people will collect benefits for longer periods, so the amount of lifetime scheduled benefits will grow faster than initial scheduled benefits. Second, although people in cohorts that begin to receive benefits before the projected exhaustion date of the combined trust funds will collect their initial scheduled benefits, some people in those cohorts would still be receiving benefits when the trust funds were exhausted. For those people, lifetime payable benefits are projected to be less than lifetime scheduled benefits.

Within a birth cohort, the ratio of lifetime benefits to lifetime earnings is higher for workers with lower earnings than for workers with higher earnings because of the progressive nature of the Social Security benefit formula and the difference in mean lifetime earnings. Those effects are partially offset by the longer average life expectancy of higher earners. Within each birth cohort, the ratio is higher for women than for men. ♦

Exhibit 10.

### Mean Initial Benefits, Replacement Rates, and Lifetime Benefit-to-Earnings Ratios for Disabled Workers, With Scheduled and Payable Benefits

10-Year Birth Cohort	Initial Benefits (Thousands of 2016 Dollars)		Initial Replacement Rate <sup>a</sup> (Percent)		Present Value of Lifetime Benefits Relative to Lifetime Earnings (Percent) <sup>b</sup>	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All Disabled Workers</b>						
1940s	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1960s	17	16	53	53	21	18
1980s	22	16	58	44	23	17
2000s	31	22	59	41	24	18
<b>Workers Whose Disability Begins Before Age 40</b>						
1940s	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1960s	10	10	61	61	75	71
1980s	12	12	63	63	73	59
2000s	18	13	65	46	75	53
<b>Workers Whose Disability Begins Between Ages 40 and 54</b>						
1940s	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1960s	15	15	54	54	25	23
1980s	20	15	59	46	32	24
2000s	28	20	61	44	33	24
<b>Workers Whose Disability Begins Between Age 55 and the Full Retirement Age</b>						
1940s	16	16	50	50	11	11
1960s	19	19	51	49	16	13
1980s	26	18	56	39	16	12
2000s	36	26	56	39	17	13

Source: Congressional Budget Office.

Initial annual benefits and replacement rates are computed for all people who are projected to receive Disability Insurance benefits. All values are net of income taxes paid on benefits.

n.a. = not available. No data are available for people who died before 1984.

- a. Initial annual benefits as a percentage of the average of the last five years of substantial earnings before being awarded benefits, adjusted for growth in prices. Earnings are “substantial” if they amount to at least half of a worker’s average indexed earnings.
- b. All disability benefits received plus retired-worker benefits received after the full retirement age. To calculate present value, benefits are adjusted for inflation (to produce constant dollars) and discounted to age 65. To compute lifetime earnings, past earnings are adjusted for average growth in prices.

The trends projected for initial benefits of disabled workers are similar to those for benefits of retired workers (see Exhibit 7): DI beneficiaries are projected to receive higher real initial benefits in the future than beneficiaries receive today.

For this analysis, replacement rates for disabled workers were computed using the last five years of substantial earnings, with adjustments to account for growth in prices. Replacement rates generally are higher for workers whose disability begins at younger ages because they tend to have lower average earnings than workers whose disability begins later. Replacement rates are also higher for disabled workers than for retired ones (see Exhibit 8) because the earnings of disabled workers tend to be lower overall.

The mean present value of lifetime payments to disabled beneficiaries relative to their lifetime earnings—including the retirement benefits they receive after reaching the full retirement age—is much greater than the equivalent ratio for retired workers (see Exhibit 9). That occurs because disabled beneficiaries are younger when they begin to collect benefits, so they receive benefits for a longer period, on average, than retired workers do and because their lifetime earnings are lower than those of retired workers. CBO projects that real lifetime disability benefits relative to lifetime earnings will, in general, be greater for each birth cohort than for the preceding cohort if scheduled benefits are paid. ♦

Exhibit 11.

### Mean Lifetime Social Security Taxes and Benefits Relative to Lifetime Earnings, With Scheduled and Payable Benefits, by Birth Cohort



Source: Congressional Budget Office.

Lifetime Social Security taxes consist of the present value of the employer's and employee's payroll taxes combined. Lifetime benefits include the present value of all Social Security benefits except those received by young widows, young spouses, and children, which are excluded from this measure because of insufficient data for years before 1984.

Scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds. Payable benefits are benefits as calculated under that act, reduced as necessary to ensure that outlays do not exceed the Social Security system's revenues once the balances in the Social Security trust funds are exhausted.

To calculate present value, amounts are adjusted for inflation (to produce constant dollars) and discounted to age 65.

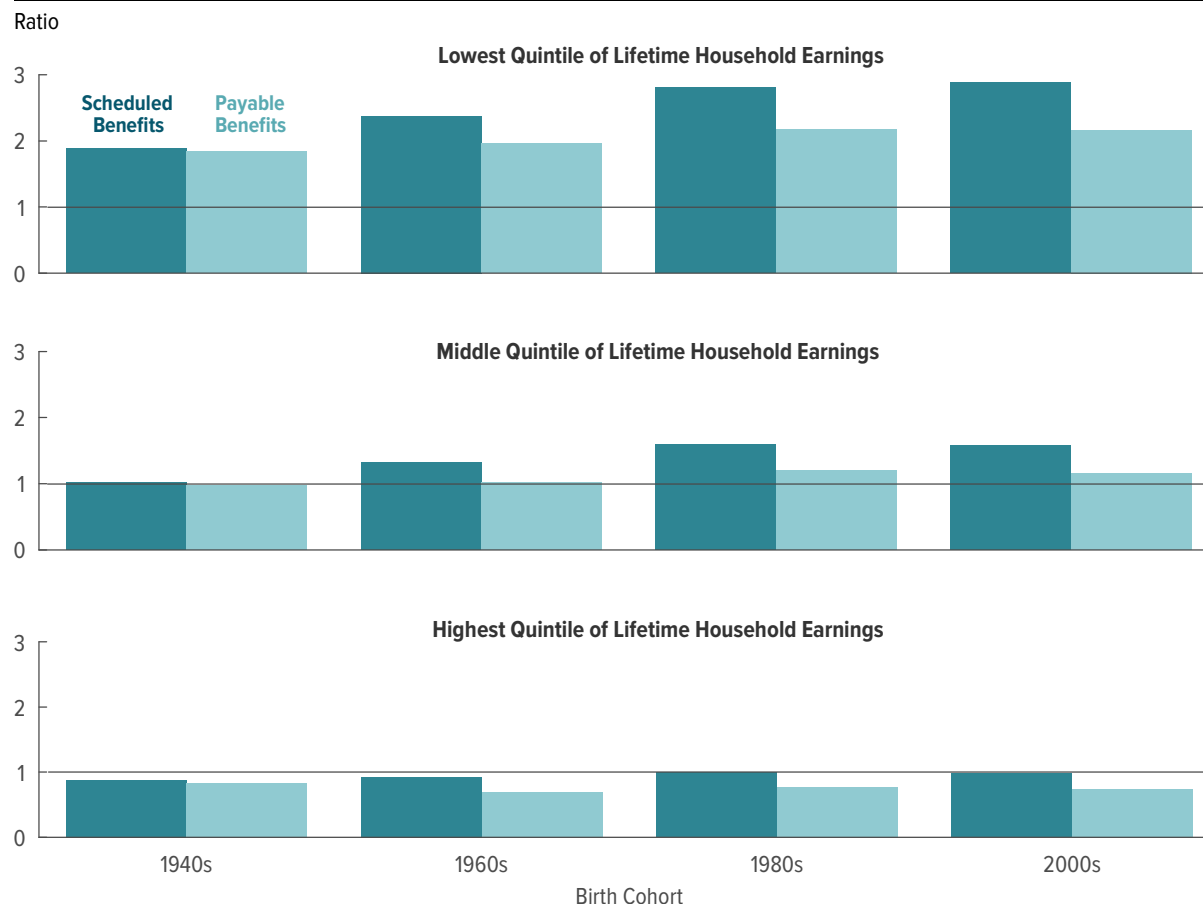
People in lower earnings quintiles receive more in Social Security benefits, relative to their lifetime earnings, than do people with higher earnings, although in dollar terms, benefits are substantially higher for people in groups with higher lifetime earnings.

In contrast to Exhibit 9, the scheduled and payable benefits shown here include benefits paid not only to retired workers but also to disabled workers as well as to the dependents and survivors of both groups of workers. Benefits shown are net of any income taxes that recipients pay on their benefits.

Projected decreases in the proportion of wages going to earners in lower quintiles and projected increases in life expectancy lead to larger increases in real lifetime Social Security benefits than in lifetime earnings for later cohorts. People who were born in the 1940s and who are in the lowest quintile of household earnings are projected to receive lifetime benefits that are 19 percent of lifetime earnings, whereas people in that same quintile who were born in the 1980s are projected to receive scheduled benefits that are equal to 34 percent of their lifetime earnings. For people in the highest quintile, for whom earnings growth is faster than for others, that ratio is 7 percent for people in all birth cohorts. Lifetime payable benefits are lower than scheduled benefits but follow a similar pattern across quintiles. ♦

Exhibit 12.

### Mean Lifetime Social Security Benefit-to-Tax Ratios, With Scheduled and Payable Benefits, by Birth Cohort



Source: Congressional Budget Office.

The benefit-to-tax ratio is a comparison of the present values of benefits received over a lifetime—net of income taxes that some recipients pay on their benefits—and of payroll taxes paid. Lifetime benefits include the present value of all Social Security benefits except those received by young widows, young spouses, and children, which are excluded from this measure because of insufficient data for years before 1984. To calculate present values, amounts are adjusted for inflation (to produce constant dollars) and discounted to age 65. Payroll taxes consist of the employer's and employee's shares combined.

Scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds. Payable benefits are benefits as calculated under that act, reduced as necessary to ensure that outlays do not exceed the Social Security system's revenues once the balances in the Social Security trust funds are exhausted.

If benefits are paid as scheduled, Social Security participants will receive more in benefits than they pay in taxes, on average. (In this exhibit, that occurs when a bar is above the horizontal line, which denotes a 1:1 ratio.) For people with lower lifetime earnings, the present value of scheduled benefits will exceed the present value of taxes paid. However, for people with household earnings in the top quintile, the present value of scheduled benefits received will be slightly less than or equal to the present value of taxes paid.

Benefit-to-tax ratios are higher for people with lower household earnings, in part because the benefit formula is progressive and in part because people with lower earnings are more likely to receive disability benefits, dependent benefits, or both. Increases in life expectancy boost benefit-to-tax ratios for later cohorts.

If the combined trust funds are exhausted, the taxes that are collected will be insufficient to pay scheduled benefits and, as a result, benefit-to-tax ratios for payable benefits will be lower than those for scheduled benefits for all categories of people. For the program to be self-supporting, current and future generations would need to pay more in taxes than they receive in benefits to offset earlier participants' larger benefit-to-tax ratios. ♦





## Appendix: CBO's Projections of Demographic Variables

Social Security's revenues and outlays depend on the size and composition of the U.S. population. Consequently, the Congressional Budget Office's projections of revenues and outlays for the program rely on projections of the nation's rates of fertility, mortality, and immigration.<sup>1</sup> For the current analysis, CBO produced its own projections of those rates. All told, CBO projects, the population will grow from 328 million today to 400 million in 2046. The agency also has projected the rate at which people will qualify for Social Security's Disability Insurance program in coming decades.

### Fertility

CBO estimates a total fertility rate of 1.9 children per woman for the 2016–2046 period.<sup>2</sup> (That rate is the average number of children that a woman would have in her lifetime if, at each age of her life, she experienced the birthrate observed or assumed

for that year and if she survived her entire child-bearing period.) Fertility rates often decline during recessions and rebound during recoveries. However, after the 2007–2009 recession, the U.S. fertility rate (which was 2.1 in 2007) dropped, and it has remained below 1.9 since then. CBO's projection is consistent with the recommendation of the Social Security Advisory Board's 2015 Technical Panel on Assumptions and Methods and slightly below the average rate of 2.0 that CBO projected last year for the 2015–2040 period.<sup>3</sup> The

change in projected fertility is the largest factor in this year's projection of slower population growth.

### Mortality

The mortality rate, which is the number of deaths per thousand people, has generally declined in the United States for at least the past half century. During that period, the mortality rate has generally improved more quickly for younger people than for older people. In particular, CBO's recent review of the data suggests that the differences in relative improvements in mortality exhibited by various age groups are significant and likely to continue. For example, mortality rates for people less than 15 years old declined by about 80 percent between 1950 and 2012, an average drop of more than 2½ percent per year, whereas mortality rates for people over the age of 80 declined by an average of less than 1 percent per year over the same period. CBO now projects that mortality rates for each five-year age group will continue to decline at the average pace experienced from 1950 through

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1. The projections of demographic variables discussed in this appendix are the same projections that the agency used in Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), pp. 103–104, [www.cbo.gov/publication/51580](http://www.cbo.gov/publication/51580).

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2. CBO projects a total fertility rate, but in its long-term model, the likelihood that a particular woman will have a child depends on such factors as that woman's education, marital status, immigration status, and childbearing history. See Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), pp. 103–104, [www.cbo.gov/publication/51580](http://www.cbo.gov/publication/51580).

3. See the report of the 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), p. 9, <http://go.usa.gov/cJYR5> (PDF, 3.4 MB); and Congressional Budget Office, *The 2015 Long-Term Budget Outlook* (June 2015), [www.cbo.gov/publication/50250](http://www.cbo.gov/publication/50250).

2012.<sup>4</sup> In contrast, in its 2015 long-term projections, CBO projected that the rate of decline would be the same for all ages and both sexes. This year's projections show a slower rate of decline in mortality rates for people in older groups than for younger groups, but no difference by sex.

CBO's projections indicate that, in 2040, the average life expectancy at birth will be 82.3 years, compared with 79.2 years in 2016.<sup>5</sup> Similarly, CBO projects that life expectancy at age 65 in 2040 will be 21.2 years, or 1.8 years longer than life expectancy at age 65 in 2016.<sup>6</sup> The life expectancies projected for 2040 this year are a bit shorter than those reported last year: In last year's report, life

expectancy at birth and at age 65 in 2040 was projected to be 82.6 years and 21.8 years, respectively.

After projecting average mortality rates for men and women in each age group, CBO incorporates differences in those rates on the basis of marital status, education, and lifetime household earnings. (For people under 30, the mortality projections account for age and sex only.) CBO projects a greater life expectancy for people who are married, have more education, and are in higher income groups.<sup>7</sup>

### Immigration

CBO's immigration projections match those underlying its 10-year baseline through 2026. After 2026, the rate of net annual immigration (which accounts for all people who either enter or leave the United States in any year) is projected to decline slowly until 2036, when it is expected to equal the rate projected by the Census Bureau.<sup>8</sup> (CBO anticipates that the rate of net annual immigration will continue to match the Census Bureau's projections thereafter.) On that basis, the rate of net annual immigration to the United States is pro-

jected to be 4.0 per thousand people in the U.S. population in 2026 and 3.7 per thousand people in 2046. Net annual immigration is anticipated to rise from 1.4 million people in 2026 to 1.5 million people in 2046. The current projection is higher than the annual net immigration rate of 3.2 per thousand people after 2025 that CBO used in its 2015 long-term projections. CBO increased its projection for the period after 2026 to be more consistent with the trend it anticipates for the next 10 years. Net annual immigration has varied greatly over time, however, so estimates of authorized and unauthorized immigration over the long term are subject to a great deal of uncertainty. The number of immigrants could be higher or lower than CBO projects.

### Disability

On the basis of an analysis of recent trends and recommendations by the Social Security Technical Panel on Assumptions and Methods, CBO has reduced its projection of the rate at which people will qualify for disability benefits beyond the coming decade.<sup>9</sup> Specifically, CBO now projects that out of 1,000 people who have worked long enough to qualify for disability benefits but who are not yet receiving them, an average of 5.4 people will qualify for the program each year over the long run. In last year's report, that average was projected to be 5.6.

4. Because of uncertainty about the possible effects of changes in other factors as disparate as the increase in obesity throughout the population and improvements in medical technology, CBO has based its mortality projections on a simple extrapolation of past trends. For further discussion on the topic, see the report of the 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), pp. 13–20, <http://go.usa.gov/cJYR5> (PDF, 3.4 MB).

5. Life expectancy as used here is period life expectancy, which is the amount of time that a person in a given year would expect to survive beyond his or her current age on the basis of that year's mortality rates for various ages.

6. CBO projects that life expectancy in 2090 will be 87.3 years at birth and 24.6 years at age 65. CBO's projections of life expectancies are longer than those of the Social Security trustees (85.9 and 23.6 years, respectively) but shorter than the projections (88.3 and 25.3 years, respectively) recommended in the report of the 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), pp. 13–20, <http://go.usa.gov/cJYR5> (PDF, 3.4 MB).

7. For more information about mortality differences among groups with different earnings, see Congressional Budget Office, *Growing Disparities in Life Expectancy* (April 2008), [www.cbo.gov/publication/41681](http://www.cbo.gov/publication/41681); and Julian P. Cristia, *The Empirical Relationship Between Lifetime Earnings and Mortality*, Working Paper 2007-11 (Congressional Budget Office, August 2007), [www.cbo.gov/publication/19096](http://www.cbo.gov/publication/19096).

8. See Census Bureau, "Population Projections, 2014 National Population Projections: Summary Tables," Table 1 (accessed December 14, 2016), <http://go.usa.gov/x33DB>.

9. See the report of the 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), pp. 29–31, <http://go.usa.gov/cJYR5> (PDF, 3.4 MB). This rate matches the rate projected by the Social Security trustees.



## Definitions

**actuarial balance:** The difference between a trust fund's income rate and its cost rate.

**average indexed earnings:** A measure of average annual earnings over a lifetime, equal to average indexed monthly earnings multiplied by 12.

**average indexed monthly earnings (AIME):** A measure of taxable earnings over a person's lifetime that is used to set Social Security benefits. The AIME for a retired-worker beneficiary is calculated from the recipient's 35 years with the highest earnings subject to Social Security payroll taxes. Taxable earnings before age 60 are indexed to growth in average wages; earnings at age 60 and later enter the computations at their nominal amounts. Dividing the total earnings (after indexing) by 420 (35 years multiplied by 12 months) yields the AIME for a retired worker. For a disabled worker, the number of years of earnings included in the calculation depends on the age at which that person becomes eligible for disability benefits. Taxable earnings that were credited more than two years

before the initial benefit computation are indexed to growth in average wages; earnings for the two years that precede the initial benefit computation enter the computations at their nominal amounts. A period of less than 35 years is used in the AIME calculation for a worker who claims retired-worker benefits after having previously claimed disability benefits but then recovered and left the disability rolls.

**average wage index:** An index that measures the average amount of total wages in the United States in a calendar year, including earnings in employment not covered by Social Security. Several automatic adjustments under Social Security law are based on this index.

**cost rate:** The present value of outlays for a period, plus the present value of a year's worth of benefits at the end of the period, divided by the present value of gross domestic product or taxable payroll over the same period.

**Disability Insurance Trust Fund:** One of two Social Security trust funds, it finances the activities of the Disability Insurance program.

**full retirement age:** The age at which a person becomes entitled to claim full retirement benefits; also called the normal retirement age. That age is set according to the year in which a person was born. Under current law, for workers born before 1938, that age is 65. For workers born between 1938 and 1943, the full retirement age increases by two months for each successive birth year, until it reaches age 66 for people born in 1943. The full retirement remains at age 66 for workers born between 1943 and 1954, and then, starting with people born in 1955, it increases by two months for each successive birth year, until it reaches age 67 for people born in or after 1960. For people turning 62 in 2015 the full retirement age is 66. It will begin to increase again for people turning 62 in 2017, and it will reach age 67 for those turning 62 in 2022.

**income rate:** The present value of tax revenues for a period, plus the trust funds' initial balance, divided by the present value of taxable payroll or gross domestic product over the same period.

**initial benefits:** For retired workers, benefits that would be received by workers eligible to claim Old-Age Insurance benefits who have not yet claimed any other Social Security benefits (such as disability benefits or survivors' benefits). For this study, CBO calculated benefits under the simplifying assumption that all workers would claim benefits at age 65. The initial benefit amount is based on a worker's own earnings only through age 61 and is net of income taxes paid on those benefits. For disabled beneficiaries, initial benefits are benefits at the time of initial benefit receipt, net of any income taxes paid on those benefits.

**lifetime benefits:** The present value at age 65 of benefits received over a lifetime for a person who lives at least to age 45, net of income taxes paid on those benefits. Lifetime benefits include retired-worker benefits, disabled-worker benefits, and benefits paid to dependents and survivors of workers. Because there are insufficient data on benefits received by young widows and children for years before 1984, benefits paid to young widows, young spouses, and child beneficiaries are excluded from this measure.

**lifetime earnings:** The present value at age 65 of inflation-adjusted earnings over a lifetime, including

earnings above the taxable maximum, for a person who lives at least to age 45.

**lifetime household earnings:** For someone who is single in all years, the present value of his or her inflation-adjusted earnings over a lifetime, including earnings above the taxable maximum. In any year in which a person is married, the measure of that person's earnings is the average of the couple's earnings, with adjustments to account for economies of scale in household consumption.

**Old-Age and Survivors Insurance Trust Fund:** One of two Social Security trust funds, it finances the activities of the Old-Age and Survivors Insurance program.

**payable benefits:** Benefits as calculated under current law, reduced as necessary to conform to the limits imposed by a trust fund's balance. If a trust fund's balance declined to zero and current revenues were insufficient to cover benefits specified in law, the Social Security Administration would no longer be permitted to pay full benefits when they were due. The manner in which outlays would be reduced is not specified in law. For this report, CBO assumed that Old-Age and Survivors Insurance and Disability Insurance benefits paid to existing beneficiaries and to new beneficiaries would be reduced by the percentage necessary to make the program's total annual outlays equal its total available revenues once the combined trust funds were exhausted.

**payroll tax:** A tax on people's earnings that is credited to the Old-Age and Survivors Insurance Trust Fund and the Disability Insurance Trust Fund. Under current law, 12.4 percent of people's earnings up to a maximum amount each year—\$118,500 in 2016—are subject to the payroll tax. Workers and their employers each pay half; self-employed people pay the entire amount.

**present value:** A single number that expresses a flow of current and future income (in taxes) or payments (in benefits) in terms of an equivalent lump sum received or paid at a specific time. The value depends on the rate of interest, known as the discount rate, used to translate past and future cash flows into dollars at that time.

**quintile:** One of five equal groups into which a population can be divided according to the distribution of a particular variable; in this report, the distribution is in lifetime household earnings.

**replacement rate:** The ratio of a Social Security recipient's benefit payments to his or her past earnings.

**scheduled benefits:** Full benefits as calculated under current law, regardless of the amounts available in the Social Security trust funds.

**taxable maximum:** The maximum amount of annual earnings to which the payroll tax is applied (\$118,500 in 2016). The taxable maximum increases annually with average earnings; in years without a cost-of-living adjustment (as in 2010,

2011, and 2016), the taxable maximum does not increase. The taxable maximum does not decrease when average wages decline.

**taxable payroll:** The total amount of earnings (wages and self-employment income) from employment covered by Social Security that is below the applicable annual taxable maximum.

**trust funds:** The accounts to which Social Security taxes are credited and from which benefits are paid. Interest on the funds' balances also is credited to the trust funds, and administrative expenses are withdrawn from them. The two trust funds dis-

cussed in this report are the Old-Age and Survivors Insurance (OASI) Trust Fund and the Disability Insurance (DI) Trust Fund. Although they are legally separate, in this report, CBO generally follows the common analytical convention of considering them as combined and refers to them as the combined, or OASDI, trust funds.

**trust fund balance:** At any given time, the balance in a program's trust fund is an indicator of the historical relationship between receipts and expenditures. Trust funds have an important legal meaning in that their balances are a measure of the amounts that the government is permitted to

spend for certain purposes under current law. In a given year, the receipts credited to a trust fund, along with any interest credited on previous balances, minus spending for benefits and administrative costs constitute its surplus or deficit.

**trust fund exhaustion date:** The year in which a trust fund's balance will reach zero.

**trust fund ratio:** The balance in a trust fund at the beginning of the year divided by projected outlays for that year.



## About This Document

This Congressional Budget Office publication provides additional information about long-term projections of the Social Security program's finances that were included in *The 2016 Long-Term Budget Outlook* (July 2016). Those projections and the additional information presented in this document update projections CBO prepared last year and reported in *CBO's 2015 Long-Term Projections for Social Security: Additional Information*.

In keeping with CBO's mandate to provide objective, impartial analysis, this report makes no recommendations.

The analysis was prepared by Stephanie Hugie Barelo, Geena Kim, Marina Kutavina, Xiaotong Niu, Charles Pineles-Mark, and Michael Simpson of CBO's Long-Term Analysis Unit, with guidance from Julie Topoleski and David Weaver. Sheila Dacey, Noah Meyerson, and Emily Stern provided comments on the report. Justin Lee and Ezra Porter provided the fact-checking.

Jeffrey Kling and Robert Sunshine reviewed the report. Loretta Lettner edited the document, and Maureen Costantino and Gabe Waggoner prepared it for publication. Stephanie Hugie Barelo prepared the supplemental data.

The report is available on the agency's website ([www.cbo.gov/publication/52298](http://www.cbo.gov/publication/52298)).

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Director

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